

Comparisons of Job Characteristics

Focus Occupation: [Civil Engineers \(17-2051\)](#)

Associated Occupation: [Environmental Engineers \(17-2081\)](#)

[Compare Knowledge](#)

[Compare Skills](#)

[Compare Abilities](#)

[Compare Detailed Work Activities](#)

[Compare Tools and Technologies](#)

| | |
|----|--|
| << | Focus occupation element is much lower |
| < | Focus occupation element is lower |
| 0 | Focus occupation element is at a similar level |
| > | Focus occupation element is at a higher level |
| >> | Focus occupation element is at a much higher level |

Knowledge

Similarity of Focus Occupation to Associated Occupation: 89

Focus Occupation: Civil Engineers (17-2051)

Associated Occupation: Environmental Engineers (17-2081)

| Associated Occupation's Key Knowledge Elements | Average Rating, All Occupations | Associated Occupation's Rating | Focus Occupation's Rating | | Evaluation of Focus Occupation |
|--|---------------------------------|--------------------------------|---------------------------|----|--|
| Engineering and Technology | 5.7 | 21.7 | 24.5 | > | Current knowledge level is likely sufficient |
| Design | 5.2 | 17.2 | 23.4 | >> | Current knowledge level is likely more than sufficient |
| Mathematics | 9.2 | 16.3 | 20.0 | >> | Current knowledge level is likely more than sufficient |
| Chemistry | 4.8 | 15.8 | 10.8 | << | Extensive education and/or training may be required |
| Physics | 4.3 | 15.7 | 15.8 | 0 | Current knowledge level may be sufficient |
| Law and Government | 5.9 | 13.6 | 11.3 | < | Expanded education and/or training may be required |
| Building and Construction | 4.0 | 13.0 | 21.6 | >> | Current knowledge level is likely more than sufficient |
| Public Safety and Security | 6.9 | 12.0 | 12.6 | 0 | Current knowledge level may be sufficient |
| Biology | 3.7 | 10.0 | 5.8 | << | Extensive education and/or training may be required |
| Transportation | 4.6 | 9.0 | 13.9 | >> | Current knowledge level is likely more than sufficient |
| Geography | 3.9 | 8.3 | 9.7 | > | Current knowledge level is likely sufficient |

The maximum possible rating is 25.

Source: Alaska Department of Labor and Workforce Development, Research and Analysis Section analysis of O*NET (Occupation Information Network) data.

Skills

Similarity of Focus Occupation to Associated Occupation: 90

Focus Occupation: Civil Engineers (17-2051)

Associated Occupation: Environmental Engineers (17-2081)

| Associated Occupation's Key Skills Elements | Average Rating, All Occupations | Associated Occupation's Rating | Focus Occupation's Rating | | Evaluation of Focus Occupation |
|---|---------------------------------|--------------------------------|---------------------------|--|--------------------------------|
|---|---------------------------------|--------------------------------|---------------------------|--|--------------------------------|

| | | | | | |
|-----------------------------------|------|------|------|----|--|
| Reading Comprehension | 10.7 | 16.4 | 15.5 | 0 | Current skill level may be sufficient |
| Critical Thinking | 10.8 | 14.5 | 14.8 | 0 | Current skill level may be sufficient |
| Complex Problem Solving | 9.1 | 13.9 | 14.5 | 0 | Current skill level may be sufficient |
| Judgment and Decision Making | 9.4 | 13.9 | 14.5 | 0 | Current skill level may be sufficient |
| Systems Analysis | 6.5 | 13.1 | 11.7 | < | A higher skill level may be required |
| Mathematics | 6.2 | 12.3 | 15.7 | >> | Skill level is likely more than sufficient |
| Systems Evaluation | 6.4 | 11.7 | 11.7 | 0 | Current skill level may be sufficient |
| Science | 4.5 | 11.4 | 11.9 | 0 | Current skill level may be sufficient |
| Operations Analysis | 5.0 | 11.0 | 14.6 | >> | Skill level is likely more than sufficient |
| Quality Control Analysis | 5.9 | 10.4 | 10.6 | 0 | Current skill level may be sufficient |
| Management of Financial Resources | 3.3 | 7.2 | 8.9 | > | Skill level is likely sufficient |
| Programming | 2.2 | 5.6 | 5.2 | 0 | Current skill level may be sufficient |
| Technology Design | 2.6 | 5.5 | 5.0 | < | A higher skill level may be required |

The maximum possible rating is 25.

Source: Alaska Department of Labor and Workforce Development, Research and Analysis Section analysis of O*NET (Occupation Information Network) data.

Abilities

Similarity of Focus Occupation to Associated Occupation: 98

Focus Occupation: Civil Engineers (17-2051)

Associated Occupation: Environmental Engineers (17-2081)

| Associated Occupation's Key Abilities Elements | Average Rating, All Occupations | Associated Occupation's Rating | Focus Occupation's Rating | Evaluation of Focus Occupation | |
|--|---------------------------------|--------------------------------|---------------------------|--------------------------------|---|
| Problem Sensitivity | 11.1 | 17.0 | 15.4 | < | Some improvement in abilities may be required |
| Deductive Reasoning | 10.6 | 16.2 | 15.2 | 0 | Current ability level may be sufficient |
| Oral Comprehension | 12.5 | 16.1 | 15.5 | 0 | Current ability level may be sufficient |
| Written Comprehension | 11.0 | 16.0 | 14.9 | 0 | Current ability level may be sufficient |
| Inductive Reasoning | 10.2 | 15.4 | 14.4 | 0 | Current ability level may be sufficient |
| Information Ordering | 9.9 | 14.2 | 13.8 | 0 | Current ability level may be sufficient |
| Category Flexibility | 9.0 | 13.6 | 13.4 | 0 | Current ability level may be sufficient |
| Flexibility of Closure | 7.8 | 13.5 | 13.3 | 0 | Current ability level may be sufficient |
| Mathematical Reasoning | 6.3 | 13.4 | 14.9 | > | Current ability level is likely sufficient |
| Perceptual Speed | 7.4 | 11.9 | 11.8 | 0 | Current ability level may be sufficient |
| Speed of Closure | 5.9 | 11.2 | 9.9 | < | Some improvement in abilities may be required |

The maximum possible rating is 25.

Source: Alaska Department of Labor and Workforce Development, Research and Analysis Section analysis of O*NET (Occupation Information Network) data.

Activities that Both Occupations Have in Common

Similarity of Focus Occupation to Associated Occupation: 97

Focus Occupation: Civil Engineers (17-2051)

Associated Occupation: Environmental Engineers (17-2081)

| Work Activities | Exclusivity of Activity |
|--|-------------------------|
| Adhere to safety procedures | 12 |
| Advise clients or customers | 19 |
| Advise clients regarding engineering problems | 67 |
| Analyze ecosystem data | 69 |
| Analyze engineering design problems | 69 |
| Analyze engineering test data | 71 |
| Analyze project proposal to determine feasibility, cost, or time | 69 |
| Analyze scientific research data or investigative findings | 27 |
| Analyze technical data, designs, or preliminary specifications | 47 |
| Analyze test data | 64 |
| Calculate engineering specifications | 64 |
| Collect scientific or technical data | 30 |
| Communicate technical information | 4 |
| Compile numerical or statistical data | 38 |
| Confer with engineering, technical or manufacturing personnel | 25 |
| Coordinate engineering project activities | 71 |
| Create mathematical or statistical diagrams or charts | 43 |
| Delegate authority for engineering activities | 73 |
| Develop or maintain databases | 30 |
| Develop plans for programs or projects | 31 |
| Develop policies, procedures, methods, or standards | 21 |
| Develop tables depicting data | 33 |
| Direct and coordinate activities of workers or staff | 3 |
| Direct personnel in support of engineering activities | 74 |
| Draw prototypes, plans, or maps to scale | 57 |
| Estimate cost for engineering projects | 69 |
| Estimate time needed for project | 64 |
| Evaluate costs of engineering projects | 70 |
| Evaluate engineering data | 60 |
| Examine engineering documents for completeness or accuracy | 62 |
| Explain complex mathematical information | 30 |
| Interpret aerial photographs | 69 |
| Judge soil conditions | 77 |
| Lead teams in engineering projects | 73 |
| Operate land or site surveying instruments | 80 |
| Plan construction of structures or facilities | 75 |
| Plan testing of engineering methods | 72 |
| Prepare reports | 8 |
| Prepare technical reports or related documentation | 22 |
| Provide analytical assessment of engineering data | 75 |
| Read maps | 42 |
| Read technical drawings | 7 |
| Resolve engineering or science problems | 46 |
| Test equipment as part of engineering projects or processes | 67 |
| Understand construction specifications | 53 |
| Understand engineering data or reports | 48 |

| | |
|---|----|
| Understand government construction contracting regulations | 87 |
| Use building or land use regulations | 65 |
| Use computer aided drafting or design software for design, drafting, modeling, or other engineering tasks | 58 |
| Use computers to enter, access or retrieve data | 3 |
| Use drafting or mechanical drawing techniques | 50 |
| Use field notes in technical drawings | 78 |
| Use government regulations | 44 |
| Use intuitive judgment for engineering analyses | 72 |
| Use knowledge of investigation techniques | 16 |
| Use knowledge of regulations in surveying or construction activities | 78 |
| Use land surveying techniques | 80 |
| Use mathematical or statistical methods to identify or analyze problems | 30 |
| Use pollution control techniques | 62 |
| Use project management techniques | 47 |
| Use quantitative research methods | 35 |
| Use relational database software | 26 |
| Use scientific research methodology | 21 |
| Use spreadsheet software | 18 |
| Use technical regulations for engineering problems | 61 |
| Use word processing or desktop publishing software | 17 |
| Work as a team member | 36 |
| Write business project or bid proposals | 48 |

Not all positions in these occupations will necessarily perform all of the listed activities. The exclusivity rating is an indication of how unique the activity is amongst all occupations. The maximum rating is 100. High scores indicate that only a small number of occupations engage in that activity.

Source: Alaska Department of Labor and Workforce Development, Research and Analysis Section analysis of O*NET (Occupation Information Network) data.

Tools and Technologies that Both Occupations Have in Common

Similarity of Focus
Occupation to Associated
Occupation: 70

Focus Occupation: Civil Engineers (17-2051)

Associated Occupation: Environmental Engineers (17-2081)

| Tools and Technologies | Exclusivity |
|--|-------------|
| Audio and visual equipment | 4 |
| Business function specific software | 1 |
| Computer printers | 2 |
| Computers | 1 |
| Content authoring and editing software | 1 |
| Data management and query software | 1 |
| Development software | 4 |
| Indicating and recording instruments | 2 |
| Industry specific software | 1 |
| Information exchange software | 1 |
| Network applications software | 1 |

Not all positions in these occupations will necessarily use all of the listed tools and technologies. The exclusivity rating is an indication of how unique the tool or technology is amongst all occupations. The maximum rating is 100. High scores indicate that only a small number of occupations use that tool or technology.

Source: Alaska Department of Labor and Workforce Development, Research and Analysis Section analysis of O*NET (Occupation Information Network) data.